

No. 126, Original

In The Supreme Court of the United States

DEPOSITION OF DALE E. BOOK, P.E.

STATE OF KANSAS,

Plaintiff,

vs.

STATE OF NEBRASKA and STATE OF COLORADO,

Defendants.

Thursday, April 12, 2012

8:04 a.m.

PURSUANT TO NOTICE and the Federal Rules of Civil Procedure, the above-entitled deposition was taken on behalf of Defendants at 1525 Sherman Street, Room 120, Denver, Colorado, before Denise A. Freeman, Registered Professional Reporter and Notary Public within Colorado.

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1	I N D E X	
2	EXAMINATION	PAGE
3	April 12, 2012	
4	By Mr. Wilmoth	4
5	By Mr. Draper	81
6	EXHIBITS	INITIAL REFERENCE
7	1 Notice of Deposition of Mr. Dale E.	4
8	Book and Subpoena Duces Tecum	
9	2 Response to Expert Report of James	4
10	C. Schneider, Ph.D., on Nebraska's	
11	Proposed Changes to the RRCA	
12	Accounting Procedures	
13	(Exhibits attached to original and electronic	
14	transcripts to counsel ordering same.)	
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		

1 P R O C E E D I N G S

2 DALE E. BOOK, P.E.,

3 having been first duly sworn, was examined and
4 testified as follows:

5 EXAMINATION

6 BY MR. WILMOTH:

7 Q. Good morning, Mr. Book.

8 A. Good morning.

9 (Deposition Exhibit 1 was marked.)

10 Q. (BY MR. WILMOTH) We premarked a couple of
11 items to facilitate the deposition here. Could you
12 please take a look at what we have marked as
13 Exhibit No. 1, which is the subpoena.

14 A. Yes.

15 Q. And could you tell me, Mr. Book, if you have
16 seen that document before.

17 A. Yes, I have.

18 Q. And have you brought any supplemental
19 materials in response to the request on page 2?

20 A. No, I have not.

21 (Deposition Exhibit 2 was marked.)

22 Q. (BY MR. WILMOTH) And we have marked
23 Exhibit 2 as your report, dated -- I believe it's
24 March 15. Do you recognize that document?

25 A. Yes, I do.

1 Q. And does that look like an accurate copy of
2 your report?

3 A. Yes, it is.

4 Q. And just to be clear, that's a report you
5 authored with Mr. Larson, right?

6 A. Yes.

7 Q. Mr. Book, this is the second, at least,
8 deposition we have had together. I would rather not run
9 through your resume again unless you have any
10 significant supplementation you would like to discuss
11 with me.

12 A. No, I do not.

13 Q. All right. Thank you.

14 Mr. Book, did you participate in developing
15 the RRCA groundwater model?

16 A. Yes, I did.

17 Q. Would you please explain your participation
18 in that regard.

19 A. I was a member of the groundwater modeling
20 committee on behalf of the State of Kansas, and I
21 attended the meetings of the committee and assisted in
22 the technical aspects of the development of the model
23 and the datasets and the use of the model for the inputs
24 for the accounting procedures.

25 I was also involved in some of the

1 accounting procedure aspects of the FSS although I think
2 technically the accounting procedures are not considered
3 part of the groundwater model committee, per se.

4 Q. With regard to the accounting group, it's
5 not clear to me whether there was a committee officially
6 charged or whether there was kind of a loose-knit group
7 of folks who were trying to develop the procedures. Can
8 you enlighten me in that regard?

9 A. Yes, I can. There was not a committee
10 formed for that. It was a -- generally there was input
11 from a number of people for each of the states. I think
12 the specific document itself came down to a compilation
13 by Ann Bleed, Dave Barfield, and Ken Knox, but I know
14 that there was participation from other people for each
15 of the states.

16 Q. And do you recall if Ms. Bleed or Mr. Knox
17 were also participants of the groundwater modeling
18 committee?

19 A. I don't recall the -- the formal membership
20 of the committee is documented in the Special Master's
21 report, I believe, so there are a set of names there.

22 But there were other people in all of the
23 committee meetings. I think each of the states may have
24 had more people at the meetings than were officially
25 listed as committee members. I don't recall the exact

1 status of Mr. Knox and Ms. Bleed.

2 Q. And I believe you mentioned that you helped
3 to identify some datasets that were appropriate for
4 inclusion in the model; is that right?

5 A. Yes.

6 Q. Can you tell me a little bit about that
7 process? Were you responsible for determining how to
8 acquire the data or for determining which data to use or
9 how to use it?

10 A. I would say, all of those aspects. The
11 model requires certain data inputs which, after the FSS,
12 that's a matter of collecting the data each year that's
13 specified in the FSS. But prior to the FSS during model
14 development, all of that information had to be compiled
15 from past records.

16 In addition, there was calibration
17 information that needed to be collected and compiled and
18 analyzed. And so that was part of the process of data
19 collection and analysis.

20 Q. How did you individually or as a committee
21 go about determining which data to utilize?

22 A. Well, the types of data that are necessary
23 were pretty clear from the model itself. The model
24 requires certain inputs to run it, primarily pumping and
25 precipitation, and the model also requires certain

1 parameters to calibrate against, primarily water levels
2 and base flows.

3 With regard to the source of information for
4 model inputs, it was basically in consultation with the
5 other states, investigating what was the best available
6 information and either developing or obtaining that
7 data.

8 Q. You mentioned the best available
9 information. Was that part of the charge of the
10 committee, to try and obtain the best available
11 information?

12 A. No, it was not.

13 Q. Was that a professional choice, professional
14 judgment?

15 A. I think it's typical, when developing a
16 groundwater model of this nature -- there have been a
17 lot of -- a sort of precedent, if you want to call it
18 that -- of groundwater modeling activities, both in this
19 basin and in other basins similar to this.

20 So I think all of the people on the
21 committee -- or most of the people were aware of the
22 types of information that were necessary. I would say
23 that the data that was compiled for this model was very
24 comparable to other datasets that were developed for
25 other types of models.

1 Q. And you mentioned pumping and precipitation
2 as to datasets; is that right?

3 A. Yes.

4 Q. Could you describe any other datasets that
5 might have been important at the time?

6 A. The coverage of riparian area that would be
7 subject to ET in the groundwater model, that's a
8 combination of density and coverage and some parameters
9 related to the rates of ET.

10 Q. "ET" being, for the record?

11 A. Evapotranspiration.

12 In addition to pumping information, there
13 was also information that needed to be developed for
14 consumptive use so that you could convert pumping to net
15 pumping. I can't specifically think of any other types
16 of data right now. I am sure there may have been.

17 Q. How about recharge and return flows?

18 A. Yes. There are several elements of
19 recharge, of course. The pumping -- the water that's
20 pumped for irrigation has return flows, which is figured
21 into the net pumping.

22 There's canal seepage, reservoir seepage,
23 and return flows from surface water irrigation. And
24 there's also precipitation recharge.

25 Q. And how did you deal with the imported water

10

1 supply? What datasets were relevant there?

2 A. The primary dataset was diversions from the
3 Platte River as well as data related to storage and
4 discharge of water back to the Platte River as well as
5 delivery of water for irrigation, which was then used in
6 combination to make estimates of recharge from the
7 canals and reservoirs.

8 There was evaporation data that needed to be
9 collected and analyzed. And there's also an irrigation
10 efficiency component.

11 Q. And how would you characterize the quality
12 of all of those various datasets?

13 A. All of the datasets that I have been
14 describing this morning were all of variable quality.

15 Q. Did they vary over time and space or over
16 activity?

17 A. Both.

18 Q. Could you generalize that variation or is it
19 too variable?

20 A. In general, the available record improved
21 over time since we were collecting data going back at
22 least to 1940 for water use inputs to the model. Data
23 related to pumping, for example, is fairly sparse in the
24 early part of the study period.

25 And then as you went later in the study

1 period towards 2000, the information about irrigated
2 acreage as well as pumping and crop demand improved.

3 I think the same would be true for the
4 Platte River diversions, the Platte River recharge. I
5 think the same would also be true for irrigated area
6 because irrigated area was a component -- it improved
7 over time.

8 Q. To what do you attribute the improvement?
9 Was it simply additional data points or better
10 collection or better measurement devices?

11 A. Both. I would attribute it to evolution as
12 data collection becomes more technically advanced
13 through scientific development of instrumentation, as
14 the Ogallala aquifer was becoming more and more
15 developed, and as groundwater administration was
16 becoming more and more focused.

17 Those are the types of things that produced
18 more intensity and frequency of data.

19 Q. How would you characterize the quality of
20 the data today? Is it about as good as you need or
21 could it be improved?

22 A. Myself, I am not directly familiar with all
23 the data elements that are coming into the model updates
24 today. I think, before I could give a dependable answer
25 to that, I would have to spend some time studying some

1 of the sources of data that come in today.

2 I don't expect that any are worse than were
3 available in 2000, but I think that -- the big issue, of
4 course, would be the quality of the pumping data, and I
5 haven't kept up with the details about that quality.

6 Q. Were there some specific events in maybe the
7 late 1990s that resulted in 2000 becoming a benchmark
8 for data improvement? Did something happen during that
9 decade that led to an improvement in the data quality?

10 A. No, not that I can think of. Any data
11 improvement, I would think, would be driven more by the
12 FSS and the specific agreements that were reached
13 regarding data inputs to the model, which was after the
14 1990s.

15 Q. So your reference to the time period 2000 is
16 really just a reference to the FSS and what was required
17 in the way of data collection from that point forward?

18 A. Yes. The model was calibrated and the
19 committee was developing datasets through the year 2000.

20 Q. And am I correct in understanding that the
21 calibration period for the model dates back to 1918?

22 A. Yes. All of the period of record was used
23 to some degree in the calibration. I was not personally
24 doing calibration calculations, and so I am not aware to
25 what extent the earlier period provided any substantial

1 data. The only information you have available is what
2 really goes into the calibration.

3 So it's really a function of when the data
4 became available over time.

5 Q. So if there was a dearth of data from 1918
6 to 1940, how did you go about dealing with that
7 challenge?

8 A. The information I was involved in related to
9 the pumping data, which basically began in 1940. I
10 think any stream flow data that would have been used for
11 base flow, as well as water level data that would have
12 been used for calibration, I think the modelers
13 responsible for the calibration lived with what they
14 had.

15 And they probably have computational
16 techniques to deal with the different density of data
17 over time. I am not familiar with that personally.

18 Q. Mr. Book, were you present for Mr. Larson's
19 deposition on Monday?

20 A. Yes.

21 Q. Do you recall the discussion that Mr. Larson
22 and I had about the concept of true values? It's not a
23 moral question, just a technical question.

24 A. Yes, I do.

25 Q. Do you have an opinion about whether there

14

1 is any merit to trying to determine the true value of an
2 impact or an influence or an effect on the Republican
3 River system through the model?

4 A. Yes, I have an opinion.

5 Q. Would you share that with me, please.

6 A. That when you are using a model to evaluate
7 the parameters that we're developing with this model,
8 you are not going to be able to know the true value.
9 It's an unmeasurable term. So that's why you are using
10 the model, and it becomes a computational estimate based
11 on the data that you have and the calculational
12 processes that you put into the model.

13 So I think the focus becomes, what's the
14 calculational process and the calibration of that tool
15 and the quality of the data that goes into it?

16 Q. Can I turn your attention to page 8 of your
17 report, please. In the last paragraph of this page, I
18 interpret you and Mr. Larson to be saying that there's
19 really no way to measure the degree of error with any
20 particular method. Is that true? Am I interpreting
21 that correctly?

22 A. Are you referring to a specific part of this
23 page with that question?

24 Q. Yeah. The middle of the last paragraph
25 reads, "The findings of the arbitrator that depletions

1 caused by pumping are unknown means that the 'error'
2 associated with any method cannot be determined."

3 A. Yes, I see that. Could you repeat the
4 question.

5 Q. If we really can't ever know the true value
6 of the things we are estimating through the model, then
7 it's not possible to determine the degree of error? Is
8 that what you are suggesting here?

9 A. Yes. The specific statement that the error
10 associated with any method cannot be determined is Steve
11 Larson's opinion, statistically based. And I don't have
12 myself a specific opinion regarding whether or how such
13 an error would be calculated if it was necessary to
14 calculate that error.

15 Q. And accepting Mr. Larson's statement as a
16 true statement, then does that mean, in your view, that
17 any particular method is as valid or invalid as any
18 other method?

19 A. No.

20 Q. Why not?

21 A. Because I think you have to look at the
22 aspects of the analysis that I was describing, the model
23 structure, and the data input, and the overall
24 formulation of the analysis. And I think there's enough
25 modeling work out there in general that you can

1 evaluate, based on sort of standard practice, what a
2 better method would be.

3 And so I think you would focus on sort of
4 standard-practice-type things that are developed in
5 other modeling settings as well as the experience of the
6 people doing the analysis.

7 Q. So as long as you are adhering to the
8 standard practices, the model result is assumed to be
9 valid regardless of whatever anyone might think the true
10 value is that you are trying to model; is that right?

11 A. The issue about adherence to standard
12 practices is oftentimes open to interpretation. I think
13 you have to rely on the judgment and the experience of
14 the modeler, if you want to call them modelers. They
15 are typically hydrologists and engineers.

16 And the experience that they have in
17 developing or using these tools is an integral part of
18 the analysis.

19 Q. But we are not running the model simply to
20 generate a result, right? We are running the model to
21 try to represent the physical processes in the basin
22 that lead to various river flows. Is that a fair
23 statement?

24 A. No. We are running the model for a specific
25 result. The purpose of the modeling committee was to

1 develop the tool. And now that the tool has been
2 developed, there are very specific criteria as to how
3 that tool will be used. So that's what we are doing
4 now.

5 Q. And how is that tool used today?

6 A. It is specifically defined what the data
7 elements are that are necessary and what modes the model
8 will be run in and what outputs from the model will be
9 used and how those will be compiled.

10 And that provides the elements that are
11 necessary for the annual accounting updates. That's how
12 we are using the model.

13 Q. And I am hearing and understanding a lot of
14 the process. I am trying to understand the substantive
15 result. What is the output of the model?

16 A. The numbers that go into the accounting.

17 Q. What is it trying to represent?

18 A. I don't think I understand that question.

19 Q. We could agree that a calculator can give us
20 the outputs from the numbers that go into it, but what
21 is the function of the model in the context of compact
22 accounting?

23 A. To determine two things: The computed
24 beneficial consumptive use from groundwater pumping and
25 to determine the imported water supply credit at various

1 locations on an annual basis.

2 Q. And is the intent of either the modeling
3 committee or the use of the model today to represent the
4 physical processes that lead to the impacts from
5 groundwater pumping and importation of water?

6 A. There's two questions in that question
7 because you asked related to the groundwater modeling
8 committee, which is no longer operational, and with
9 respect to today for the annual updates. I can answer
10 the question for the annual updates.

11 The purpose of the model run is to take the
12 information that's required to be produced and develop
13 the numbers that go into the accounting procedures.
14 That's the purpose.

15 With respect to the modeling committee, the
16 purpose, I think, was set out in the FSS as well as
17 maybe the Special Master's second and third reports, and
18 the purpose was to develop the tool and the methods to
19 produce the inputs that are necessary for the accounting
20 procedures.

21 Q. Does it matter to you or to the modeling
22 group that runs the model today how closely the model
23 replicates what's going on in the real world or is that
24 not a relevant inquiry?

25 A. I am not on the operational part of the

19

1 engineering committee that does the calculations. I
2 don't know what's important to the Colorado and Nebraska
3 members of the engineering committee. I would be
4 surprised if they are not comparing model results with
5 base flows and water levels. It's possible that they
6 are.

7 I am not sure about the Kansas member of the
8 engineering committee, whether he reviews base flows or
9 water levels. It's not necessary. The model is done,
10 in place, and functioning to produce the results
11 necessary.

12 Q. So if I am understanding your view, as you
13 sit here, as long as the model generates the numerical
14 results that result from whatever inputs it receives,
15 it's functioning just fine?

16 A. It is, technically, under the FSS. It would
17 be possible for one member state of the engineering
18 committee, for example, to produce a complaint about the
19 calibration and a proposal to rectify it, in which case
20 I would probably be involved in reviewing that.

21 This particular proposal that we are dealing
22 with today doesn't take issue with any ongoing
23 calibration comparison, so --

24 Q. You are talking about the Nebraska proposal?

25 A. Yes.

1 Q. And it doesn't seek to modify the model in
2 any way, does it?

3 A. Yes, it does.

4 Q. How so?

5 A. It requires a new baseline run of the model
6 which, in my opinion, is a model change.

7 Q. So in your view, the manner in which the
8 model is used is a change to the model itself?

9 A. Yes.

10 Q. But just for clarity's sake, Nebraska is not
11 proposing any change to the mechanics of the model, is
12 it?

13 A. It is proposing changes to the way the model
14 would be operated. And it gets to be a little bit of a
15 semantic issue whether you call that a model change.

16 For example, there is going to be a change
17 in the recharge equation that's going to be applied to
18 some of the lands in the model change -- in the change
19 that Nebraska is proposing.

20 Q. Do you have an opinion, as we sit here
21 today, on how closely the model reflects the physical
22 processes ongoing in the basin?

23 A. Yes, I do.

24 Q. Could you share that with me, please.

25 A. Yes. It represents those conditions very

1 well.

2 Q. Do you think that's always been the case
3 since it was initiated?

4 A. Do you mean, since the model was adopted?

5 Q. Yes, sir.

6 A. Yes.

7 Q. So am I correct in understanding that the
8 model is used to represent the impacts of groundwater
9 pumping in the basin?

10 A. No, that's not quite correct. The model is
11 used to derive the groundwater pumping impacts. So it's
12 beyond just representation.

13 Q. Maybe you could explain the difference there
14 for me.

15 A. Yes. The numbers that are being generated
16 by the model are the actual results used, so the model
17 is not simply a representation of that process. The
18 model is generating the answer that's going into the
19 annual accounting.

20 Q. And that's true regardless of how accurate,
21 if you will, the representation is?

22 A. Yes.

23 Q. And is the same thing true for the recharge
24 element? Does the model operate to estimate the effect
25 of recharge or to derive the value of recharge?

1 A. I need some clarification. Are you
2 referring to the imported water supply credit when you
3 refer to recharge or --

4 Q. Well, you are anticipating my next question,
5 but yes, I would like to ask the question about both
6 recharge from any source including precipitation, for
7 example, or return flows as part of the imported water
8 supply.

9 A. Recharge is an input to the model, which is
10 part of the computational process to derive the
11 groundwater CBCU impacts and the imported water supply
12 credit.

13 We are not using any other calculation of
14 recharge out of the model. I don't believe the model
15 calculates recharge. It calculates impacts and the
16 recharges and input, is the way I would describe it.

17 Q. And is the same true of return flows?

18 A. The model does not calculate return flows.
19 It calculates impacts.

20 Q. Does it calculate the impact of the imported
21 water supply then?

22 A. Yes.

23 Q. And if you are finding that the model is
24 failing to represent one or more of those impacts, what
25 do you do? Is the model recalibrated to address that

1 issue?

2 A. You do not recalibrate the model.

3 Q. The model is never recalibrated? Is that
4 what I am hearing?

5 A. There is no decreed or agreed-to process in
6 place to recalibrate the model. So under the current
7 use of the model, it is not recalibrated.

8 Q. Is that consistent with common modeling
9 practices, in your view?

10 A. Yes.

11 Q. So usually, once a model is finished, it's
12 never recalibrated, as a matter of common practice?

13 A. I disagree with that characterization. I
14 didn't make any reference to "never" going forward in
15 the future. There's no current process in place for
16 recalibration, and so the model is not reviewed and
17 there's no process in place to recalibrate the model at
18 any periodic step.

19 Q. Would it be consistent with standard
20 practices to engage in recalibration efforts in the
21 future?

22 A. I am not sure if I can point to a standard
23 practice of a model that was specifically calibrated for
24 implementation in a decree, then being recalibrated in
25 the future unless there was some specific provision put

1 into the decree.

2 I think my view would have to be that
3 standard practice is, if you want to do that, you need
4 to provide for it in the decree process.

5 Q. Let's take it outside of the legal realm and
6 just ask your experience as a groundwater modeler trying
7 to represent groundwater flows or impacts or otherwise.
8 Assuming there's no legal limitation on recalibration
9 from a technical standpoint, is that not a standard
10 practice?

11 A. I don't think I would characterize it as a
12 standard practice. I would say, it varies from
13 application to application.

14 There's a lot of modeling problems out there
15 in the real world that are completed. The model is put
16 on the shelf. The model may be picked up by an agency
17 and used in the future simply as the model without going
18 through a recalibration exercise.

19 A recalibration exercise is a fairly
20 significant commitment of resources and time and,
21 depending on the stakeholders, could be a time sink.
22 And if there's already a model that has been developed
23 to provide a certain answer and an agency needs the
24 answer, they are going to use the model.

25 Q. You mentioned that the calibration process

1 is laborious. Could you explain how the model that we
2 are presently using was calibrated?

3 A. Not in detail. I wasn't one of the three or
4 four or five or six people that were directly doing the
5 computations and the comparisons and the adjustments for
6 that, so I am probably better off not providing you with
7 that information.

8 Q. Could you tell me how a standard groundwater
9 model is typically calibrated?

10 A. Yes. In general, you have a set of observed
11 information of calibration parameters that you are
12 comparing to, and that's going to vary in density and
13 time and space. And you develop a model and a set of
14 parameters. And you make model runs, and you compare
15 the model output with the observed data over the
16 calibration period.

17 And you develop a set of statistical
18 comparisons which measure the closeness of fit, if you
19 will, and then you start the adjustment process.

20 Q. What's the overall goal of that process?

21 A. To fit the observed data with parameters
22 that are confined to a physically -- physically viable
23 sets and to make sure that you have sufficient
24 calibration parameters in the modeling process so that
25 you can achieve a fit.

1 But then, after that, there's procedures out
2 there that sort of define how the statistics are
3 measured. You can't fit observed data perfectly, so
4 then you have to start making decisions about where you
5 are going to match the data.

6 You can't match the data everywhere in the
7 model and over every time step, so you have to decide,
8 are you going to spread the residual out evenly over
9 time and space? Are you going to focus more on
10 concentrated areas? Those are the types of judgments.
11 And it's a judgmental process and it's an iterative
12 process.

13 Q. Do you recall having any difficulties
14 calibrating the model in the Republican basin? Were
15 there any specific areas that presented a challenge,
16 just wouldn't calibrate?

17 A. Again, I wasn't the person on point. I know
18 that there were areas that -- in time and space that
19 produced challenges. I wouldn't characterize them as
20 difficulties because a calibration was achieved that was
21 considered adequate.

22 Q. Do you know where any of those areas were,
23 spatially?

24 A. No, not specifically.

25 Q. Once the calibration is complete and the

1 calibrators are satisfied, if you will, does that, to a
2 layperson, generally mean that the model outputs are
3 reflecting the measured data from that period?

4 A. Yes.

5 Q. And then, again, from a layperson's
6 perspective, does that lead to an assumption that, as
7 you use the model in the future, it will continue to
8 replicate those conditions on the ground that are
9 occurring?

10 A. That's the general assumption that you end
11 up with after you go through a modeling process. The
12 correspondence to future data, of course, is always
13 subject to observation and comparison. And so I don't
14 think there's any predetermined assumption about how
15 good that correspondence will be, going forward.

16 Q. And if there are areas that are not
17 inherently calibrated to the observed data -- I believe
18 you mentioned that there were some modifications that
19 could be made.

20 Are those kind of mathematical equations or
21 generalized assumptions? How are the areas that are not
22 calibrating adjusted? What are the typical tools that
23 the modeler uses in that regard?

24 A. I think the typical tool that I am familiar
25 with in practice would be to insert additional

1 parameters, which I know was done in parts of the
2 Republican River Basin model, for example, or to
3 reformulate the structure of the model that you are
4 using. Maybe things like grid space, density, things
5 like that.

6 So I think, in general, you can either
7 develop coefficient-type adjustments or modifications to
8 the model representation.

9 Q. Is the point of that exercise to develop a
10 mechanism to allow you to either add back in some water
11 or take out some water to make sure that things balance
12 out and reflect what the model is showing?

13 A. No. The purpose of that would be to make
14 the model output replicate better the observed data that
15 you are calibrating to.

16 Q. So, for example, if the model were showing a
17 base flow of 500 acre-feet -- or 500 CFS, say, and the
18 observed data were showing a thousand, you would make
19 some adjustment to the model to ensure that the model
20 showed a thousand CFS in flow. Is that the idea?

21 A. No. That's somewhat oversimplified.

22 Q. I am sure.

23 A. You are talking about one point in time, one
24 space in the model in a model that has a very large
25 scope and time duration. You are going to have overs

1 and unders. There's no way around that. You are trying
2 to avoid bias, but you are going to have mismatches
3 between observed and predicted flows.

4 Q. What is the concept of bias that you are
5 trying to avoid?

6 A. You are just trying to produce a set of
7 residuals or differences between predicted and observed
8 that are not geared towards one -- or weighted towards
9 positive or negative. You want those to be balanced
10 positive and negative. I think that's the primary bias
11 that I think affects modeling calibration.

12 Q. So you want to smooth things out so there's
13 no wildly positive or wildly negative result?

14 A. Once again, you cannot avoid that in
15 modeling, so you are going to have high negatives and
16 high positives.

17 Q. Can you tell me how the period 1918 to 1940
18 was calibrated?

19 A. I cannot.

20 Q. Do you know how well the model reproduces
21 the conditions occurring during that period?

22 A. I do not.

23 Q. Do you know what the major influences were
24 in the basin in that period? Was there any large-scale
25 groundwater pumping in that period?

1 A. No, there was not. The primary influence, I
2 think, would be conversion of land from prairie to
3 dryland crops and the cultivation that would have gone
4 along with that. Maybe the development of
5 stock-watering facilities would have started in that
6 period -- stock ponds, for example.

7 Those are probably the two that would come
8 to mind for me.

9 Q. Do you know whether there was any
10 large-scale importation of water into the basin?

11 MR. DRAPER: You are talking about the
12 period 1918 to 1940?

13 MR. WILMOTH: Yes.

14 A. As I would define importation of water,
15 which is physically moving water across the basin divide
16 between the other basin and the Republican River Basin,
17 that would have been occurring in the upper reaches of
18 the Platte River of Nebraska.

19 It's probably not -- it would not be
20 considered widespread because of the relative magnitude
21 with more recent levels of importation.

22 Q. (BY MR. WILMOTH) Turn your attention to
23 page 3 of your report, please. In the middle of the
24 last paragraph, there's a sentence that reads, "The
25 alternative base that the Nebraska proposal seeks to

1 include in the impact calculations represents a
2 condition that did not occur in reality."

3 And by that do you mean that no pumping and
4 no imported water run?

5 A. Yes.

6 Q. So if those processes were not taking place
7 in 1918 to 1940, yet we can calibrate to that period,
8 why isn't that period of time substantially similar to a
9 condition in which groundwater pumping and seepage from
10 imported water never occurred?

11 A. Well, the substance of this opinion relates
12 to when the large preponderance of the calibration data
13 were available and actually used to set parameters in
14 the model, and that would be water level changes that
15 resulted from pumping in the basin and base flow changes
16 that resulted from pumping and other impacts in the
17 basin.

18 And so I think that would go to the issue of
19 sort of the density of data that are available for the
20 earlier period and how that was used in the overall
21 calibration. Magnitudewise, it's a very small part of
22 the overall calibration datasets.

23 Q. So you are not suggesting it can't be done.
24 It's just a question of the quality of the result?

25 A. That what can't be done?

1 Q. That you couldn't calibrate to or create a
2 condition in which there was no significant groundwater
3 pumping or water importation?

4 A. Well, it would depend on the availability of
5 information.

6 Q. Isn't that what we do with the 1918 to 1940
7 period?

8 A. Yes. It would depend on the availability of
9 information related to water levels and base flows
10 during that period as to whether you were able to say
11 that it was well-calibrated during that period.

12 It may be less dense information. And as I
13 mentioned before, I am not personally aware of the level
14 of achievement of correspondence in that period.

15 Q. So how did you, as part of your work on the
16 modeling committee, calibrate the change in base flows
17 during that period if there was such little data?

18 A. Well, as I said before, I didn't personally
19 participate in the calibration computation part of this,
20 and I said I didn't -- was not aware of the details as
21 to what the correspondence was or the adjustments were
22 made for that period.

23 Just from my involvement, I am not aware of
24 any specific issues that arose from that period, but I
25 am aware that the density of data was less during that

1 period now because it was not a period of changing water
2 use from a pumping standpoint. It was probably more of
3 a steady base flow over that period.

4 Q. I suppose the same is true about water
5 levels?

6 A. I don't recall. In general, that's probably
7 true also.

8 Q. Let's transition from the model to the
9 accounting procedures, Mr. Book. I understand you
10 participated in this group -- we will just call it a
11 group -- that worked on the accounting procedures,
12 correct?

13 A. Yes.

14 Q. And can you explain what that entailed? How
15 did you go about your business as that group?

16 A. A lot of the formulas and structure had been
17 in place through the prior accounting that was done by
18 the engineering committee for the administration.

19 And so it was in large part adapting an
20 existing structure to incorporate the tests that were
21 provided in the FSS related to the tests for
22 compliance -- for example, the subbasin test, the
23 multiyear averaging tests, those things.

24 So tables had to be developed using the
25 basic consumptive use and virgin water supply

1 information.

2 So I guess I would characterize it as, there
3 was a part of the process that involved refining the
4 formulas to a small degree because those were largely in
5 place and then incorporating the results of that into
6 the tests that were produced by the FSS.

7 And then the third component was to
8 incorporate the results of the groundwater model into
9 the accounting procedures. I think that generally
10 covers it. I mean, there were a lot of details.

11 Q. Sure. So if I understand, the FSS was
12 pretty well hammered out in terms of the structure, and
13 the accounting procedures were being developed to ensure
14 its implementation, and the model was being developed at
15 the same time?

16 A. Could you rephrase that question? I don't
17 quite understand the relative time --

18 Q. That's what I am trying to understand, too.

19 A. -- that you are asking about.

20 Q. If I understand, the FSS was generally well
21 hammered out, the actual agreements, and then the
22 accounting procedures were being worked on to ensure
23 that it was implemented as intended?

24 A. The FSS and the accounting procedures
25 basically came together at the same time. That's kind

35

1 of documented by the end of '02 documentation. So they
2 were done concurrently.

3 Q. And you mentioned you were using some
4 modeling results to develop the procedures; is that
5 right?

6 A. No. Part of the procedures included how you
7 incorporate the model results.

8 Q. I see. But you didn't have the model
9 results at your disposal before the accounting
10 procedures were finished? Is that what you are saying?

11 A. Preliminary model results were available.
12 The accounting procedures include the steps or the
13 calculational processes that you use with the model to
14 generate the numbers that are necessary.

15 That was in place at the time that the
16 accounting procedures were submitted and made a part of
17 the FSS.

18 Q. So can you tell me about how often you
19 interacted with the modeling committee to ensure that
20 the accounting procedures and the model itself were
21 operating as intended?

22 A. I was on the modeling committee, so to the
23 extent the modeling committee was active -- and we were
24 active throughout that period because of the tight time
25 frame -- that was just a continual process.

1 The accounting procedures were not a
2 continual process because there was not as much that
3 needed to be done for that.

4 But certainly, as issues came up on the
5 accounting procedures, because of my involvement in both
6 processes, I was certainly aware of the status of each.

7 Q. And which document or which effort was
8 completed first?

9 A. Which documents are you referring to?

10 Q. Were the accounting procedures completed
11 before the model or vice versa?

12 A. Well, that comes down to how you define
13 completion of the model. The model was completed in two
14 steps. A lot of things had to be tied down for that
15 November 2002 submittal. The states were working very
16 hard to achieve agreement on as many things as possible,
17 and that was documented in the report.

18 And, in hindsight, it turns out much of the
19 model was completed at that time. The model, of course,
20 was not technically complete at that time because it
21 still needed to have final calibration which resulted in
22 some of the adjustments to parameters that I discussed
23 earlier.

24 Q. So the accounting procedures were completed
25 in late 2002 and the model was completed sometime

1 thereafter. Is that what you are saying?

2 A. The model was technically completed in
3 mid-2003, that's correct, and the accounting procedures
4 were placed in the FSS at the end of 2002.

5 Q. And as a member of the modeling committee, I
6 assume you were aware of the nonlinearity of the model?

7 A. Yes.

8 Q. And as a member of the group working on the
9 accounting procedures, why did you elect to use linear
10 equations to deal with the nonlinearity in the model?

11 A. What linear equations are you referring to?

12 Q. My understanding is that the general nature
13 of the equations and the accounting procedures is that
14 they are linear, all of them.

15 A. The linkage between the model and the
16 accounting procedures is limited to the imported water
17 supply credit, which doesn't really have any place in
18 the calculations in the accounting procedures until you
19 get to the point of subtracting it from the gauge flow
20 of the virgin water supply. That's simply a
21 calculation.

22 I don't understand how there would be a
23 nonlinear -- in my opinion, there's not a way to make a
24 nonlinear adaptation of that parameter in the accounting
25 procedures because the groundwater CBCU is generated by

1 subbasin and by state.

2 And the model produces the result that goes
3 into that part of the consumptive use attributed to each
4 state. I don't understand the nonlinearity.

5 Q. So if I understand correctly, you were, as a
6 member of the modeling committee, fully aware of the
7 nonlinear aspects of the model and that it would produce
8 certain results when stream drying occurred, for
9 example, but that there was no effort made to address
10 those nonlinear results through the accounting
11 procedures. Is that a fair assessment?

12 A. That's not a fair assessment. There was no
13 adjustment that needed to be made. The model was
14 developed to produce the impact to stream flow for the
15 two components, the groundwater CBCU and the imported
16 water supply credit. That's what the model generated.

17 The use of the information in the accounting
18 procedures didn't require any different formulation than
19 what we ended up with.

20 Q. So in other words, there was no concern
21 about the nonlinear function of the model? No need to
22 correct anything because there was nothing wrong?

23 A. Well, it's certainly my view as to the
24 participants that the other states had in the accounting
25 procedures process, I was not aware of any concerns or

1 questions being raised.

2 Q. How do the accounting procedures compute
3 pumping and IWS impacts, imported water supply impacts?

4 A. They don't.

5 Q. The accounting procedures aren't used to
6 compute pumping and imported water supply?

7 A. I want to make sure your definition of the
8 accounting procedures does not include the groundwater
9 model. The groundwater model calculates those two
10 inputs to the accounting procedures.

11 Q. What happens with those inputs?

12 A. Those are used to calculate the total
13 consumptive use in a state -- I think the technical term
14 is beneficial -- computed beneficial consumptive use.
15 That's the technical term in the accounting procedures.
16 So the model --

17 Q. We will say, CBCU.

18 A. Okay. The model results are directly
19 defined as that part of the consumptive use for each
20 state, and that's how it's used. It's used to tabulate
21 what the state's consumptive use is.

22 The imported water supply credit becomes a
23 credit where it exists, currently only in Nebraska, and
24 that is deducted off of the gauge flow.

25 Q. So can you identify for me which model run

1 calculates the imported water supply credit?

2 A. The specifics are specified in the
3 accounting procedures as to how the model will be used
4 in the -- it's the historical run compared to a model
5 run that has the Platte River recharge elements removed
6 from the data. And you compare those two runs and
7 calculate a difference.

8 Q. So there are no equations in the accounting
9 procedures that help to define the imported water supply
10 credit?

11 A. The differencing that I described is done as
12 a post-processing. Again, it's kind of where you define
13 where do the accounting procedures start versus where
14 does the model run end.

15 There's, obviously, post-processing of the
16 data that occurs. Some people may view that as part of
17 the accounting procedures. Other people may view that
18 as part of the modeling analysis.

19 Q. And I infer you view it as the latter?

20 A. I am not sure I particularly view it one way
21 or another. It's a necessary step in the process to get
22 the model results into the accounting.

23 Q. Do you recall testifying at the arbitration
24 proceedings, Mr. Book?

25 A. Yes.

1 Q. And during those proceedings you testified
2 that the negotiators of the FSS anticipated the
3 accounting procedures might change. Do you recall that
4 testimony?

5 A. No, I don't.

6 Q. Do you believe that to be the case?

7 A. I am trying to recall the context of that.
8 I think I remember what you are talking about. Because
9 there's a provision in there, in the FSS, that the
10 accounting procedures can be amended by the Republican
11 River Compact Administration.

12 So to the extent you're characterizing that
13 as the anticipated changes that were going to happen, I
14 think the FSS provided for a process that that could
15 happen. I personally didn't have any anticipation of
16 changes that were in mind at the time.

17 I think it's not likely that in 2003 the
18 substantial members of the committee -- the accounting
19 procedures group had anything in mind because it would
20 have been adopted when they were put in place in 2002.

21 So it's hard to envision that any particular
22 person had something in mind. So I think what I was
23 referring to was the provision in the FSS that allows
24 for the RRC to make future revisions.

25 Q. Obviously, you've spent a lot of time with

1 the accounting procedures and developing those. I
2 assume you have spent quite a bit of time with them
3 subsequent to that; is that correct?

4 A. Yes.

5 Q. More than you probably wish to admit?

6 A. Well, it's covered a long period of time, so
7 I am trying to think back over all the years.

8 Q. I was surprised to hear Mr. Larson say on
9 Monday that he has never read the accounting procedures
10 in full. Have you?

11 A. Yes.

12 Q. When was the last time you did that?

13 A. Whenever a question comes up related to the
14 accounting issues, of which there are a number in this
15 case, then I consult with them when I can't remember
16 what we decided back in 2002. I don't just periodically
17 sit down and read the whole document front to end.

18 Q. Did you participate significantly in
19 developing the March 15 report marked as Exhibit 2 or do
20 you agree that Mr. Larson was the primary author on that
21 document?

22 A. I agree that Mr. Larson is the primary
23 author.

24 Q. Could you tell me or identify for the record
25 specifically which portions you participated in

1 developing?

2 A. I was specifically involved in most, if not
3 all, of the sections in consultation with Mr. Larson,
4 maybe to a limited extent on several of the issues and
5 more on some of the other issues. That's probably my
6 best answer.

7 Q. So I understand, you're saying kind of a
8 consultative role or reviewer?

9 A. Yes.

10 Q. Are there any provisions in the document
11 with which you disagree?

12 A. No.

13 Q. And I infer that you concur with all the
14 statements?

15 A. Yes.

16 Q. Did you perform any specific technical
17 analysis in support of the document?

18 A. Depending on how you define "technical
19 analysis," I spent quite a bit of time reviewing the
20 report and the backup materials that were produced.

21 This report was prepared to respond to
22 the -- I think I stated it in the title -- so the
23 technical analysis that I did was a review of the
24 report, the deposition transcript of Mr. Schneider, and
25 the backup documents.

1 Q. When you say, "the report," you are
2 referring to Dr. Schneider's report from November of
3 2011?

4 A. Yes.

5 Q. But you created no original technical work
6 for the report; is that right?

7 A. That's correct. The closest that would come
8 to that is the appendix location map, but that's not
9 really an analysis.

10 Q. So you spent some time with Dr. Schneider's
11 report then, I understand?

12 A. Yes.

13 Q. And I think I asked you this before, but I
14 am not sure I recall the answer: Aside from changing
15 the manner in which the model is run, are there
16 additional changes to the model that Dr. Schneider has
17 proposed to the infrastructure of the model, if you
18 will?

19 A. The technical changes would be involved in
20 how the datasets are constructed. And, again, whether
21 you want to consider that specifically part of the model
22 for purposes of changes, I am not sure, but certainly
23 datasets have got to be modified.

24 How you reference -- for a specific example,
25 how you reference the precipitation recharge curve on

1 part of the land and the model has to be changed.

2 Again, I am not familiar enough with the pre-processors
3 of this model to know whether that's handled totally in
4 the pre-processors or something was modified.

5 Q. Do you know why that change would need to be
6 made?

7 A. Yes. Because under the new run that's made,
8 the irrigation is turned off on the Platte River mound
9 area.

10 Q. Do we presently conduct any runs that have
11 the mound off using the model?

12 A. We do have runs with the mound off, yes.

13 Q. Why would that dataset not be appropriate
14 for use in this context?

15 A. The issue that I am referring to relates to
16 which recharge curve you use when you go from irrigation
17 to nonirrigation, and that land is currently not run in
18 any mode of nonirrigation.

19 Q. Do you have an opinion as to how difficult
20 it would be to develop that curve?

21 A. I don't. The curve is developed. It's
22 part --

23 Q. Which one you use?

24 A. Yeah, which one you use. I don't have an
25 opinion on the technical implementation of that.

1 Q. Do you agree that the largest impact of the
2 proposed change by Nebraska is in the Swanson to Harlan
3 reach?

4 A. Are you referring specifically to a
5 statement in my report?

6 Q. Actually I am referring to your testimony
7 during the arbitration proceedings. I believe you
8 testified to that effect, and I am trying to see if that
9 has changed.

10 A. I don't know how you are defining "impact"
11 with this question, and I don't know how I was referring
12 to it in the answer I gave, if that's what I said. But
13 there's changes to groundwater CBCU by state, by
14 subbasin, and there's changes to imported water supply
15 credit by subbasin.

16 And I am not sure how you want those stacked
17 up in that comparison, so I am not in a position to say
18 right now that one of those is bigger than the other in
19 terms of number of acre-feet.

20 Q. Do you know which is the largest?

21 A. I don't.

22 Q. Speaking of the imported water supply
23 credit, if the credit is increased -- and I am talking
24 about the credit now, not the imported water itself --
25 if the credit is increased, what's the effect on the

1 compact accounting?

2 A. Well, the first step is to reduce the
3 computed virgin water supply because it's deducted from
4 the gauge. I think that's the extent of the effect that
5 I can think of. It reduces the computed virgin water
6 supply.

7 Q. How does that affect Nebraska's compact
8 accounting balance?

9 A. I'm sorry. I need you to repeat. Were we
10 looking at increasing or decreasing?

11 Q. Increasing.

12 A. Yeah. Increasing the imported water supply
13 credit would have the effect of reducing the computed
14 virgin water supply.

15 Q. How would that affect Nebraska's compact
16 accounting balances in any given year?

17 A. All other things being equal, the
18 reduction -- I'm sorry -- the increase in imported
19 water -- computed imported water supply credit would
20 improve, if you want to characterize it like that -- the
21 Nebraska balance compliance, if you will.

22 Q. During the arbitration proceedings, you
23 testified that the magnitude of that change could be on
24 the order of several thousand acre-feet. Do you agree
25 with that statement today?

1 A. Yes.

2 Q. Do you agree that it was about 10,000
3 acre-feet in 2005 and 2006, the magnitude of the
4 proposed change?

5 A. As it relates to the imported water supply
6 credit?

7 Q. The overall compact accounting balance.

8 A. I don't recall what the effect on the
9 overall balance is.

10 Q. Do you dispute Dr. Schneider's conclusion
11 that it could be as much as 800,000 acre-feet over the
12 next 50 years, the magnitude of the proposed change?

13 A. I am not sure. I haven't really analyzed
14 that number. And it may come down to how you define
15 "all other things remaining equal."

16 We are dealing with two issues here. In the
17 Nebraska proposal, we are dealing with the imported
18 water supply credit and the computed beneficial
19 consumptive use of groundwater, and Mr. Schneider's
20 analysis may have been looking at net.

21 So whether you attribute that to the
22 combination of the whole change we are evaluating here
23 or simply the imported water supply credit, I wouldn't
24 want to characterize that.

25 Q. You read Dr. Schneider's conclusion, though,

1 right?

2 A. Yes.

3 Q. Do you dispute it?

4 A. I haven't produced any numbers that would
5 indicate that I disagree with the number. I think the
6 calculation that was used to derive that number would
7 speak for itself as to what the cause of it is.

8 Q. But just to be clear, neither you nor
9 Mr. Larson have prepared any countervailing analyses of
10 that statistic or that figure?

11 A. Of the 800,000 acre-feet?

12 Q. Yes, sir.

13 A. We -- well, I should speak for myself -- I
14 have not.

15 Q. Mr. Book, did you observe Dr. Ahlfeld's
16 testimony at the arbitration proceedings?

17 A. Yes.

18 Q. Do you agree with Dr. Ahlfeld's assessment
19 that, in cases of stream drying, the current accounting
20 method double counts the storage replenishment component
21 of stream flow recovery?

22 A. No. I don't have a viewpoint one way or the
23 other on that.

24 Q. Do you agree that it is improper to count
25 the beneficial consumptive use of imported water as

1 computed beneficial consumptive use or virgin water
2 supply?

3 A. The FSS provides a provision that
4 specifically speaks to that, and the process that we set
5 up with the model and the accounting procedures at the
6 time of the FSS implemented that provision in a way that
7 prevents that. I think the interpretation of what you
8 are asking me can be somewhat complicated.

9 Q. I am trying to ask it as a yes or no
10 question.

11 A. Could you repeat the question.

12 Q. Is it proper to count the beneficial
13 consumptive use of imported water as CBCU or virgin
14 water supply?

15 A. No. And that's not done with the current
16 procedures.

17 Q. And why has that not been an appropriate
18 thing to do?

19 A. Because we don't include consumptive use of
20 imported water in the computations of the consumptive
21 use and the virgin water supply.

22 Q. And do you recall working to negotiate that
23 provision?

24 A. I recall that provision being discussed. I
25 don't recall any specific technical analysis that went

1 into that provision. That seemed more of a conceptual
2 provision that was put into the FSS.

3 There was no request made, Generate a model
4 run, for example, to put a number on this. That wasn't
5 done. We didn't sit around the table asking each other
6 how we are going to calculate that number or not
7 calculate that number. I don't recall that being done.

8 Q. Do you recall what the intent of that
9 concept was, just the fundamental substantive purpose?

10 MR. DRAPER: Which concept are you referring
11 to?

12 Q. (BY MR. WILMOTH) The concept of avoiding the
13 result that beneficial consumptive use of imported water
14 would be included as CBCU or virgin water supply.

15 A. Yes, I do.

16 Q. What was the intent?

17 A. That the imported water supply, the
18 consumptive use of that water not be included in the
19 consumptive use calculations, and in this specific case,
20 that would relate to the state of Nebraska.

21 Q. So the imported water supply credit is
22 designed to be, for lack of a better term, 100 percent
23 credit. You are not trying to give credit here and take
24 credit away there?

25 A. That's one way to look at it. The provision

1 was put in there so that, I think, the engineers would
2 not start tabulating consumptive use of Platte River
3 water and adding it into the virgin water supply.
4 That's my view of that.

5 So the results of the modeling analysis are
6 the imported water supply credit, which is the
7 difference in the two model runs we talked about.

8 Q. So do you agree that a method that charges
9 Nebraska with consumption of the imported water supply
10 should be avoided? An accounting procedure or a
11 particular use of the model or anything else that
12 charges Nebraska with consumption of imported water
13 should be avoided?

14 A. I think, if we are going to start doing that
15 type of assessment, it's going to require some
16 discussion about what the intent of that provision was
17 in a quantitative sense, which was not done.

18 The concept was laid out and the concept was
19 adopted, but consumption of imported water supply was
20 not going to be part of the consumptive use.

21 Q. Mr. Book, have you looked at the report of
22 Dr. Willem Schreuder in this case?

23 A. Yes, I have looked at it.

24 Q. I have a copy of the report here -- I don't
25 have five copies -- but I will hand you this one and ask

1 you to look at page 3, if you would.

2 I believe, in his point No. 1, he indicates
3 his agreement with you that the consumption of imported
4 water supply is counter to the conditions agreed to in
5 the accounting procedures and in the FSS. Do you see
6 that?

7 A. No, I don't.

8 Q. The second sentence here.

9 MR. DRAPER: You are in the paragraph
10 numbered 1?

11 MR. WILMOTH: Yes.

12 A. Give me a minute to read this.

13 Q. (BY MR. WILMOTH) Sure.

14 A. Okay. Would you ask the question now.

15 Q. Do you agree with Dr. Schreuder's statement
16 there in that sentence?

17 A. I don't agree or disagree with the first
18 sentence. I have not evaluated the Nebraska proposed
19 solution with respect to that provision.

20 Q. Okay. I would like you to turn your
21 attention to the top of page 21. Could you read that
22 first sentence for me.

23 A. Are you referring to the very top of the
24 page?

25 Q. Yes, sir. You don't need to read it out

1 loud. I would just like to know if you agree or
2 disagree with that statement.

3 A. I disagree with that statement.

4 Q. Why so?

5 A. I don't think taking the differences between
6 impacts with and without the mound credit -- sorry --
7 the imported water supply recharge is going to form the
8 basis for a quantification of consumption of imported
9 water supply. And that's what this is referring to is
10 the differences in model runs.

11 Q. Have you had a chance to look at the -- for
12 lack of a better word and with due regard to objections
13 by Colorado counsel -- the alternative scenario that
14 Dr. Schreuder has laid out here as a means to address
15 Nebraska's concerns with imported water?

16 A. Not specifically.

17 Q. So I assume you have no opinion about its
18 validity or invalidity?

19 A. That's correct. I do not.

20 Q. We have gone an hour and a half. Why don't
21 we take about 15 minutes and resume then. Is that okay
22 with you?

23 A. Yes.

24 (Break was taken from 9:30 to 9:47.)

25 Q. (BY MR. WILMOTH) Mr. Book, getting back to

1 your service on the modeling committee and the
2 accounting group, when you were finalizing the model and
3 the accounting procedures, did you ever use the model at
4 that time to simulate conditions that would occur in
5 2002 to 2007?

6 A. I did not. I am not aware of what others
7 may have done, but I wasn't involved in any runs that
8 did that.

9 Q. Do you know whether there are any such runs
10 recorded anywhere?

11 A. I don't.

12 Q. Do you recall simulating any condition
13 comparable to that period of time, '02 to '07?

14 A. Yes. The historical period would have
15 periods of low precipitation in stream flow. So to the
16 extent those were part of the historical period, yes.

17 Q. Was there a period in the historical data
18 that you used comparable to the conditions in '02 to
19 '07?

20 A. In a general way, the 1930s.

21 Q. Can you clarify what you mean by "in a
22 general way"?

23 A. Yes. I know that that's viewed by the
24 states and water users in the basin as a particularly
25 dry period that also formed the basis for the absolute

1 allocations in the compact. And that was viewed, I
2 think, in general as a critical period.

3 I haven't done a specific comparison of
4 precipitation to see how the '02 to '07 period compares
5 with that numerically, but I know that in general it's
6 probably comparable.

7 Q. So that period of 2002 to 2007 is not
8 unusual in terms of stream flows and water use; is that
9 right?

10 A. It's unusual in terms of stream flow to the
11 extent that the basin was more depleted in that period
12 than it ever was at any time historically. You asked
13 with respect to water use?

14 Q. Stream flow and water use.

15 A. The water use for that period is higher for
16 groundwater and lower for surface water than --

17 Q. Than in the '30s?

18 A. -- in historical periods. In the '30s --
19 there was no Bureau project use in the '30s and there
20 was minimal groundwater pumping in the '30s. So in
21 terms of the comparison of water use, they are
22 different.

23 Q. And did you run the results of that
24 simulation through the accounting procedures in 2002?

25 A. No.

1 Q. How about 2003?

2 A. Could I clarify? Are you asking about the
3 1930s conditions?

4 Q. Either condition. If you simulated the
5 1930s condition, did you run that through the accounting
6 procedures when they were being finalized?

7 A. I don't recall doing that, no.

8 Q. Do you know whether that was done by anyone?

9 A. I don't know.

10 Q. If that had been done, where would that
11 information be recorded?

12 A. Just based on my familiarity with the
13 process, it would be recorded either in the state
14 agencies of the three states or in the files of the
15 consultants that the three states had retained. I don't
16 have anything like that in my files.

17 Q. Do you know whether Mr. Larson does?

18 A. I don't know.

19 Q. Turning back to your report on page 4 --
20 this would be Exhibit 2 -- you note that the Nebraska
21 proposal produces an imported water supply credit that's
22 higher in certain years; is that correct?

23 A. Yes.

24 Q. How much higher and in which years?

25 A. When I am referring to this part of the

1 report, I am specifically recollecting the two figures
2 in Mr. Schneider's report -- I believe they are
3 Figure 13 and Figure 19 -- where there's a five-year
4 period for the imported water supply credit in the reach
5 between Swanson and Harlan County, and the five-year
6 period, I believe, is '02 to '06.

7 And in that period the proposed methodology
8 is quite a bit higher, relatively speaking.

9 Q. So you are just referring to your review of
10 Nebraska's technical work. You didn't conduct any of
11 your own independent analyses of that?

12 A. We do refer in this report back to the 2009
13 report that we did, which pulled all of the information
14 out of the Ahlfeld report. And since the procedure did
15 not change, all of the statistics that were compiled
16 there are still valid, and those were looked at or at
17 least summarized in that report.

18 Q. In your earlier report reviewing
19 Dr. Ahlfeld's data?

20 A. Yes. So that information resides both in
21 the Ahlfeld report and in the 2009 report that I
22 authored.

23 Q. If I understand correctly, one reason that
24 you note the Nebraska proposal results in increased
25 imported water supply credits is that the proposal uses

1 a model run that employs a baseline with no pumping; is
2 that correct?

3 A. Yes.

4 Q. And that results in a baseline with inflated
5 base flows and water levels, in your view; is that
6 right? The use of that no-pumping baseline?

7 A. I wouldn't use the word "inflated." It
8 provides a baseline where base flows are representative
9 of a no-pumping condition, and those are higher than in
10 the actual historical condition.

11 Q. And doesn't Nebraska's proposed baseline
12 include a condition with no imported water? In other
13 words, all the impacts are off, turned off, correct?

14 A. Yes.

15 Q. And if the effect of turning off groundwater
16 pumping is to raise base flows and water levels, isn't
17 the comparable effect of turning off the imported water
18 supply credit -- excuse me -- the imported water supply
19 to reduce levels and base flows?

20 A. That change has that effect, yes.

21 Q. Is it possible that using a baseline without
22 imported water could actually decrease the IWS credit in
23 certain circumstances?

24 A. The IWS credit is going to be related to the
25 imported water supply, so the IWS credit itself would be

1 lower without the imported water supply, all other
2 things being equal.

3 Q. Help me understand why this isn't a wash
4 then. I am trying to understand this concern about
5 having no pumping in the baseline.

6 A. I am not sure what terms you are referring
7 to are going to wash out against each other, but I will
8 restate the concern is that, when you have a baseline
9 condition with pumping turned off, the base flows tend
10 to be higher in that condition.

11 And that has the effect in this model in
12 this basin of producing higher imported water supply
13 credits, which is the difference of base flows to
14 conditions with the Platte River recharge off and on.

15 Q. Your report also notes that the Nebraska
16 computations result in an imported water supply credit
17 when stream flow is absent; is that right?

18 A. Yes.

19 Q. When does that occur?

20 A. That would have occurred in 2002 to 2007 in
21 this specific reach between Swanson and Harlan County
22 where the model was predicting, and actually occurred,
23 dry stream conditions in this reach.

24 And the baseline with pumping turned off has
25 stream flow in that reach, and the results then

1 calculated positive imported water supply credits in
2 that reach.

3 Q. Do you know how often that occurs, that
4 phenomenon where there's actually a calculated imported
5 water supply credit with no stream flow?

6 A. Mr. Schneider didn't do any projections, so
7 we have the '02 to '06 period to look at. I don't know
8 if it shows up in the projection that Mr. Schneider made
9 with the Kansas results because of the shape of that
10 curve.

11 It's possible, because of the precipitation,
12 that it could occur in future cycles because the Kansas
13 projection had three cycles, either three or four
14 cycles, in there, and so every time you cycle through a
15 dry period, you are going to see that.

16 I'm sorry. I need to correct that. Because
17 that projection also included increasing pumping, that
18 tended to dry up the stream much more frequently with
19 the projections. And then it occurs in that projection
20 more than in just '02 to '06.

21 Q. But just with regard to the work you did in
22 your report in that period, I am trying to get an
23 understanding of how often the imported water supply
24 credit shows up when there's no stream flow. I mean,
25 are we talking about one day in the entire period or are

1 we talking about six months at a time?

2 A. We are talking about more than one day over
3 this period. It was a fairly substantial part of the
4 period. Six months might be too low in some of those
5 years.

6 Q. Is that work shown somewhere in the report
7 or in your backup materials?

8 A. I believe you asked Mr. Larson about the
9 backup on Monday. He would have --

10 Q. He would have generated that?

11 A. He would have generated that backup, and it
12 would be related to the graph on the top of page 5 which
13 incorporates groundwater model results for base flow.
14 The imported water supply credit, of course, is
15 developed as the difference in the two runs.

16 Q. So is there anywhere I can look to determine
17 how many days in the period this phenomenon is
18 happening?

19 A. Not that I am aware of.

20 Q. Do you have an understanding or is there
21 somewhere I can look to determine how much credit shows
22 up when there's no stream flow? In other words, what is
23 the magnitude of the problem you are identifying?

24 A. I think the best representation of that is
25 to compare the two figures in Mr. Schneider's report of

1 Figure 13 and Figure 19, which looks at that '02 to '06
2 period in that particular reach. I think, beyond that,
3 there's -- I am not aware of other graphs or
4 tabulations.

5 Q. So as we sit here today, I am not able to
6 determine whether Nebraska is showing an imported water
7 supply credit to the tune of 10 acre-feet or 100,000
8 acre-feet under these conditions; is that right?

9 A. Under the conditions of dry stream flow?

10 Q. Yes.

11 A. I don't believe Kansas has produced that
12 quantification. That's correct.

13 Q. Turn your attention to page 6 of your report
14 please. I draw the inference from this section that the
15 target sets -- or I should say, it's your view that the
16 target sets of pumping and imported water are not worthy
17 of equal consideration. This is the second sentence in
18 this section. Is my inference correct?

19 A. Let me read this sentence a second.

20 Q. Sure. Take your time.

21 A. The opinion set out in this section is
22 primarily Mr. Larson's opinion regarding the reliability
23 of the two target sets.

24 Q. So you don't have a particular view of this
25 issue?

1 A. Of the issue of --

2 Q. Whether these two sets are, quote, worthy of
3 equal consideration?

4 A. That's correct. I do need to point out that
5 I provided Mr. Larson some background information in
6 this section related to data.

7 Q. On page 7 you -- or, perhaps, Mr. Larson --
8 conclude that, "It is clear that the underlying
9 conditions used to determine pumping impacts are better
10 defined than the underlying conditions used to estimate
11 impacts from the seepage water."

12 Do you see that? This is about halfway down
13 the last paragraph.

14 A. I see that.

15 Q. Do you agree with that statement?

16 A. Yes, I do.

17 Q. If the imported water supply credit is so
18 hard to measure, then why do we quantify it
19 individually?

20 And let me put it this way: Ultimately,
21 does it really matter for compact compliance purposes
22 what the CBCU is individually as calculated against the
23 imported water supply credit as calculated individually
24 or isn't the real question, what is CBCU less IWS?

25 A. Could you break that into a couple of

1 smaller questions for me, please.

2 Q. Are you asking for a more coherent question,
3 Mr. Book? I will see what I can do.

4 A. Or just one question, please.

5 Q. For compact compliance purposes, does it
6 really matter what Nebraska's individually calculated
7 CBCU is and its individually calculated IWS credit or is
8 the real question just, what's Nebraska's CBCU less IWS?

9 A. It does matter, and those are separate
10 items.

11 Q. Can you tell me what the real difference is,
12 computationally?

13 A. Computationally, the difference is that one
14 is a consumptive use that is calculated with the
15 groundwater model to compare the condition with and
16 without pumping, and that quantifies how much additional
17 water would be placed in the -- or would be in the
18 stream system without the pumping.

19 The second one is a quantification of how
20 much water is in the stream at the gauges that is
21 imported water supply so that it can be attributed as an
22 imported water supply credit for the accounting purpose.

23 Q. Is there anywhere in the accounting
24 procedures where one is found without the other?

25 A. They are always specified individually, so

1 they are --

2 Q. But don't they always appear together?

3 A. Everywhere they are specified separately.

4 They may be parallel as it relates to model results.

5 They are different elements, though. One is consumptive
6 use, which has special treatment in this compact, and
7 the other is an adjustment to the gauge and the virgin
8 water supply.

9 Q. And I understand those points, but from a
10 pure mathematical standpoint -- let me give you this
11 example: So let's assume that CBCU is 100 and the IWS
12 credit is 10. CBCU less IWS is 90, correct?

13 A. Yes.

14 Q. And if the CBCU is 90 and the IWS credit is
15 zero, CBCU less IWS is still 90, correct?

16 A. Yes.

17 Q. So in terms of calculating the impact of
18 Nebraska's actions for compact compliance, isn't it that
19 CBCU less IWS that's really the critical issue?

20 A. That calculation does have a netting effect.

21 Q. During the arbitration you testified that
22 the imported water supply was highly dependent, were
23 your words, on water level conditions. Do you recall
24 that?

25 A. Not specifically.

1 Q. Do you agree with that general statement
2 today?

3 A. Yes. The term "credit" needs to be
4 appended. It's imported water supply credit. And I
5 don't know if "highly" is an appropriate term, but it is
6 dependent on water level conditions.

7 Q. What factors affect water level?

8 A. Precipitation recharge, irrigation recharge,
9 pumping, net pumping, aquifer parameters, ET. Those are
10 about six things that I can think of in this modeling
11 environment.

12 Q. And is it generally true that the higher
13 water levels are, the higher the imported water supply
14 credit would be?

15 A. That's a very generalized statement because
16 it probably relates in a little more specificity to
17 where some of the streams go dry that would affect the
18 quantity of imported water supply credit that's
19 calculated with the model.

20 So in other words, it may not be a
21 uniform-type relationship between water level and
22 calculated discharge. It may be affected by where --
23 how these reaches of stream vary between flow
24 conditions.

25 Q. If I said, just holding everything else

1 equal, would it be true that, the higher the water
2 levels are, the higher the imported water supply credit
3 would be? Or does your answer still hold in that
4 condition?

5 A. I probably should have prefaced it by
6 saying, all other things being equal, that's correct.

7 Q. And would the inverse also be true then?
8 All things being equal, if water levels were lower, you
9 would expect the imported water supply credit generally
10 to be lower, subject to the caveats you mentioned?

11 A. Yes.

12 Q. And during the arbitration you testified, at
13 least at that time you had not recently looked at
14 groundwater heads in the mound area. Have you done that
15 lately?

16 A. No.

17 Q. You also mentioned during the arbitration
18 hearing that the imported water supply credit is
19 basically a function of surface water diversions and
20 seepage, including precipitation. Do you recall that?
21 Or would you agree to that now?

22 A. I recall directly related to the surface
23 water diversions. I don't recall it being related to
24 the precipitation and the pumping. I mean, what we are
25 quantifying is the recharge that reaches a stream that's

1 caused by the Platte River diversions.

2 Q. And do you know whether the seepage and
3 return flows from the Platte are increasing or
4 decreasing or generally stable, say, in the last 50
5 years?

6 A. Yes. I know we documented that in graphs in
7 our 2009 report. My general recollection is that
8 diversions from the Platte River and the resulting
9 recharge have generally been down since peaking in the
10 1970s. That's all documented in the graphs that we
11 provided in that report.

12 Q. Is that the best available information that
13 you possess on that matter?

14 A. We probably have more -- that's the best
15 available information because it's constituted with
16 model inputs, so yes, that is.

17 Q. And my recollection of that information is
18 that there were no data after 2006; is that right?

19 A. I believe that's correct, yes.

20 Q. Do you know whether seepage and return flows
21 have increased or decreased since that time?

22 A. I don't know.

23 Q. Do you know --

24 A. I should amend that answer a little bit. I
25 think, to the extent that diversions are higher up on

1 the Platte system, then I do think I recall seeing some
2 information that Platte River diversions had increased
3 in the recent years of high stream flow.

4 I don't know the specifics about which years
5 that would involve, but I'm at least aware enough to
6 know that diversions are higher than in the drought.

7 Q. And do you know how -- or whether
8 groundwater pumping has decreased since 2002 in
9 Nebraska -- in the Nebraska portion of the Republican
10 River Basin?

11 A. Just looking at model-wide or
12 Republican-River-Basin-wide statistics sort of as a
13 total without getting into individual well by well or
14 NRD by NRD, I know that the pumping is lower after 2002
15 than it was in the '98 to '02 period.

16 Q. And holding all other things equal, would
17 you expect the imported water supply credit to increase
18 if groundwater pumping were reduced further?

19 A. Your question implies comparing different
20 time periods. That question really can only be answered
21 in the context of the same or a concurrent time period.

22 Imported water supply credit would tend to
23 be higher without pumping than with pumping without
24 comparing it to prior periods. So if you are trying to
25 compare it to '02 to '06, I can't answer that for you.

1 Q. That's fine.

2 I know you are familiar with the concept of
3 a lag effect, Mr. Book. Is there a lag effect with
4 regard to seepage in the IWS credit -- excuse me -- the
5 imported water supply?

6 A. Yes.

7 Q. And does that result in increasing base
8 flows in the river over time?

9 A. I don't know, because those imports peaked
10 out -- excuse me -- those diversions peaked out in the
11 '70s and they have been lower since then. And so the
12 issue about whether you are still in an inclining state
13 or a declining state is a matter of analysis that I
14 haven't done.

15 Q. Do you know how long the lag effect is of
16 the imported water supply?

17 A. No. That's documented in modeling analyses,
18 but I haven't specifically pulled that out.

19 Q. Do you know where I might find that
20 analysis?

21 A. In the model results. You would have to do
22 comparative runs.

23 Q. There's not such a run sitting on the shelf
24 somewhere?

25 A. No.

1 Q. I would like to turn your attention to
2 page 9 of the report, please. And I am specifically
3 looking at the section entitled, "Nebraska's Projection
4 of Future Impacts." Why do you and/or Mr. Larson
5 believe that the results in ES-2 of the Schneider report
6 are realistic?

7 MR. DRAPER: Could you state that question
8 again? I missed it.

9 MR. WILMOTH: Sure.

10 Q. (BY MR. WILMOTH) Recognizing that Mr. Larson
11 may have written this, I am trying to caveat my
12 question, but to the extent you believe that the results
13 in Figure ES-2 of the Schneider report are realistic,
14 why so?

15 A. Can you refer to a specific sentence in this
16 provision?

17 Q. I am inferring from this entire section that
18 either Mr. Larson or yourself or both of you believe
19 that the results in Figure ES-2 of Dr. Schneider's work
20 are realistic or a better representation of what is
21 likely to occur in the future.

22 MR. DRAPER: Did you say "are realistic"?

23 MR. WILMOTH: Yeah.

24 A. That is not what is being expressed in this
25 section of the report. I think one of the points was

1 that this test was not a realistic situation, the test
2 being, shut off the Platte River recharge and analyze
3 pumping -- with and without pumping in a condition with
4 no Platte River. So that's an unrealistic scenario.

5 I think the testimony went to, were the
6 results understandable, and I thought Mr. Larson's
7 testimony was yes, the results coming out of the model
8 were understandable.

9 Q. (BY MR. WILMOTH) Let me put it this way: Do
10 you agree that, under the current accounting procedures,
11 Nebraska's annual compact accounting balance is likely
12 to improve if the imported water supply credit is
13 reduced or discontinued?

14 A. Do you mean under Mr. Schneider's --

15 Q. Under the current accounting procedures.

16 A. I need you to describe a condition that we
17 are looking at.

18 Q. Well, let's look under Dr. Schneider's
19 condition.

20 Let me rephrase that. Is there any
21 condition that you can conceive of under which
22 Nebraska's accounting balance would improve by reducing
23 or discontinuing imported water supply credit?

24 A. I think the results that are presented in
25 the Schneider report presented a calculational scenario.

1 I don't agree that the scenario is realistic, but the
2 calculational results indicate a condition whereby the
3 loss of the imported water supply credit was not
4 balanced by the change in the groundwater CBCU that was
5 occurring in that area. Those are two different things.

6 There is imported water supply credit, which
7 is a function of the Platte River recharge and heads in
8 the aquifer, and there's computed groundwater
9 consumptive use, which is a function of the pumping and
10 heads of the aquifer.

11 Q. Let me try it this way: Holding all other
12 conditions equal, does it make sense to you that
13 Nebraska's compact accounting balance would improve if
14 the imported water supply were reduced or eliminated?

15 I want to get my semantics correct here. I
16 am not talking about the credit. I am talking about the
17 imported water supply.

18 A. Yes. I think the example that Mr. Schneider
19 presented in his report was a hypothetical calculational
20 approach where that could happen. That's what his graph
21 showed.

22 Q. What do you interpret it to show? ES-2 we
23 are talking about, right?

24 A. That the accounting balance was lower with
25 the imported water supply credit.

1 Q. And you think that's realistic?

2 A. No, that's not a realistic scenario. That
3 is a possibility of the modeling when you consider that
4 the imported water supply is different than the computed
5 groundwater CBCU.

6 MR. WILMOTH: Well, why don't we take a
7 break and I will have a professional gin me up some good
8 questions here and we will get to the bottom of it.

9 (Break was taken from 10:24 to 10:42.)

10 Q. (BY MR. WILMOTH) Mr. Book, I asked you
11 earlier about how long the lag effect generally was.
12 And I think you said you weren't sure, but do you
13 remember, in your experience, if it's usually about
14 1 year or 5 years or 25 years? I am just trying to get
15 a sense of scale.

16 A. As it relates to the Platte River recharge,
17 do you mean?

18 Q. Well, that's a good question. Does it
19 differ -- does the lag effect of pumping impacts differ
20 from the lag effect of imported water in the model?

21 A. It could. I haven't specifically tried to
22 quantify that or compare it.

23 Q. Do you have any idea what it looks like in
24 either case?

25 A. No, I really haven't looked at that.

1 Q. I would like to turn to your conclusion
2 section, the Summary and Conclusion, pages 10 and 11.
3 And I asked Mr. Larson about this on Monday, but I would
4 like your views, too.

5 In the last paragraph you suggest that
6 achieving Nebraska's concept of additivity may
7 conceptually be a preferential result. Do you see that?

8 MR. DRAPER: This is on page 11?

9 MR. WILMOTH: Yes.

10 A. Yes, I do.

11 Q. (BY MR. WILMOTH) Do you agree with that
12 statement?

13 A. The entire statement relates to achieving
14 a -- what I would call a no-residual condition, which, I
15 guess, would be adopting the all-on all-off condition
16 and combining that with the distribution of impacts that
17 would be necessary in order to achieve the necessary
18 elements for the compact accounting. So taken as a
19 whole, I agree with that statement.

20 Q. Is there a way that the distribution of the
21 residuals could be managed to your satisfaction?

22 A. I don't know.

23 Q. Have you studied that issue?

24 A. No.

25 Q. What if all of the residuals were allocated

1 to the state of Nebraska? Would that satisfy Kansas'
2 concern?

3 A. I don't have enough specifics about what the
4 residual would be and where it would be to know how it
5 would be distributed between the three states to answer
6 that question.

7 Q. I am suggesting it's distributed all to
8 Nebraska.

9 A. Well, residuals can go either direction, and
10 so I think there's going to be a directional component
11 to that analysis.

12 Q. Sure. But I am saying, if the states agree
13 to distribute all the residuals to Nebraska, would your
14 concern be addressed, regardless of which way they might
15 otherwise go?

16 A. I don't know. I haven't studied that issue
17 enough to have an opinion on that.

18 Q. In order to obtain this conceptually
19 preferred result, Mr. Larson indicated that various
20 things would need to be renegotiated. Do you recall
21 that discussion?

22 A. I do.

23 Q. What things would need to be addressed?

24 A. I think Mr. Larson provided a list of issues
25 that he felt would be appropriate for such a

1 consideration. In addition to the issues that he
2 mentioned, I might include data issues, data input
3 issues, but I can't think of any other issues that
4 Mr. Larson did not raise besides that.

5 Q. Are all of those factors things that are
6 inherently necessary to make the calculations, if you
7 will, that Nebraska is proposing or is this just a case
8 of Nebraska proposing something and Kansas desires
9 something in return?

10 A. I think it's a reflection of the procedures,
11 as they are, were agreed to in consideration of the
12 whole modeling and data approach at the time.

13 Q. So if Nebraska is seeking a change on one
14 end -- it's a quid pro quo situation. Kansas wants
15 something in return?

16 A. I think it's a reflection that there's a
17 reason why the current accounting procedures are in
18 place. Those procedures are appropriate.

19 And in order to consider modifying those
20 procedures, which is not necessary through the process
21 that it was set up in the FSS, which is RRCA approval,
22 that necessarily applies a consensus approach. And in
23 order to achieve a consensus, there would have to be
24 other issues included.

25 Q. That aren't necessarily directly related to

1 the proposed Nebraska change?

2 A. Well, they certainly were not included in
3 the Nebraska proposed change. Whether you consider
4 those to be related or unrelated is probably a matter of
5 perspective.

6 Q. Let me return you to our discussion about
7 the imported water supply, and we were talking about
8 Figure ES-2 in Dr. Schneider's report?

9 A. Yes.

10 Q. I want you to set aside for the purposes of
11 these questions your views of reasonableness or
12 likelihood of activity, but let's say that diversions
13 from the Platte River were to cease. And let's also
14 assume that groundwater pumping in Nebraska does not
15 change.

16 Is that the scenario that Dr. Schneider
17 showed in ES-2, as you understand it?

18 A. I believe so, yes.

19 Q. And, again, whether or not we agree or
20 disagree on whether the scenario might play out, let's
21 assume it does. Under those circumstances would you
22 expect Nebraska's compact balances to improve, all other
23 things being equal?

24 A. I don't know. I can't answer that because
25 it could go either direction.

1 Q. What would cause it to go in one direction
2 or the other?

3 A. It's the relative magnitude of the pumping
4 impacts and the relative effect of the change in water
5 level on those pumping impacts that is a different
6 magnitude than the imported water supply credit.

7 In other words, the change in pumping
8 impacts due to the head change in the aquifer could
9 outweigh the effect of those particular imported water
10 supply credits that are assumed to be removed.

11 Q. But I am asking you to assume that the
12 groundwater pumping is the same. All other things are
13 equal.

14 A. Except the water level.

15 Q. Except the importation of water. There's no
16 importation of water into the basin. You are suggesting
17 under that circumstance Nebraska's compact balances
18 could be adversely affected?

19 A. Yes.

20 MR. WILMOTH: I think that's all we have
21 got.

22 MR. DRAPER: Okay. Let's take a minute.

23 (Break was taken from 10:52 to 11:02.)

24 MS. BERNHARDT: I have no questions.

25 EXAMINATION

1 BY MR. DRAPER:

2 Q. Mr. Book, Mr. Wilmoth asked you about the
3 conclusion to your joint report with Mr. Larson. He
4 specifically referred to the second-to-last sentence in
5 your conclusion, which says, "Finding an acceptable
6 distribution may be possible, but it would require
7 renegotiation and reconsideration of all the factors
8 that allowed the States to reach agreement on the FSS."

9 In your answers did you mean to narrow that
10 sentence in any way from the breadth that it has as it
11 stands in your report?

12 A. No, I did not.

13 MR. DRAPER: No further questions.

14 MR. WILMOTH: Thank you very much, Mr. Book.
15 (WHEREUPON, the deposition concluded at 11:03 a.m.)

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1 I, DALE E. BOOK, P.E., do hereby certify
2 that I have read the foregoing transcript and that the
3 same and accompanying correction sheets, if any,
4 constitute a true and complete record of my testimony.

5

6

7

Deponent

8

9

10 () No changes () Amendments attached

11

12 Subscribed and sworn to before me this
13 _____ day of _____, 2012.

14

15 My commission expires _____.

16

17

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Notary Public

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Address _____

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State of Kansas vs. State of Nebraska and State of
25 Colorado

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I, Denise A. Freeman, do hereby certify that I am a Registered Professional Reporter and Notary Public within the state of Colorado; that previous to the commencement of the examination, the deponent was duly sworn by me to testify to the truth.

I further certify that I am not related to, employed by, nor of counsel for any of the parties or attorneys herein, nor otherwise interested in the result of the within action.

In witness whereof, I have affixed my
signature this 16th day of April, 2012.

PATTERSON REPORTING & VIDEO
Denise A. Freeman
Registered Professional Reporter
and Notary Public

1 PATTERSON REPORTING & VIDEO
2170 South Parker Road, Suite 263
2 Denver, Colorado 80231

3 April 16, 2012

4 JOHN B. DRAPER, ESQ.
Montgomery & Andrews, P.A.
5 Post Office Box 2307
Santa Fe, New Mexico 87504-2307
6

Case Name: State of Kansas vs. State of Nebraska and
7 State of Colorado
No. 126, Original
8 Deposition of DALE E. BOOK, P.E.

9 The deposition in the above-entitled matter is ready
for reading and signing. Please attend to this
10 matter by complying with ALL blanks checked below:

11 ☒ arrange with us at (303)696-7680 to read and
sign the deposition in our office
12

13 OR (if applicable),

14 ☒ have deponent read your copy; signing
attached original signature page and any
amendment sheets.
15

16 ☐ read enclosed deposition, sign attached
signature page and any amendment sheets.

17 ☒ within 35 days of the date of this letter.

18 ☐ by due to a trial date of .

19 Please be sure that the signature page and
accompanying amendment sheets, if any, are signed
20 before a notary public and returned to our office at
the above address.
21

22 If this matter has not been taken care of within said
period of time, the deposition will be filed unsigned
pursuant to the Rules of Civil Procedure.
23

24 Thank you.

Enclosures: (As above noted)

cc: Thomas R. Wilmoth, Esq., Autumn L. Bernhardt, Esq.
25

1 PATTERSON REPORTING & VIDEO
2170 South Parker Road, Suite 263
2 Denver, Colorado 80231

3 April 16, 2012

4 THOMAS R. WILMOTH, ESQ.
Special Assistant Attorneys General
5 Blankenau Wilmoth, LLP
206 South 13th Street, Suite 1425
6 Lincoln, Nebraska 68508-2002

7 Dear Mr. Wilmoth:

8 Re: Deposition of DALE E. BOOK, P.E.

9 _____ Signed, no changes.

10 _____ Signed, with changes, copy attached.

11 _____ No signature required.

12 ___X___ Reading and signing not requested pursuant to
CRCP Rule 30(e).

13 _____ Signature waived.

14 ___X___ Forwarding original transcript unsigned;
15 signature pages and/or amendments will be
forwarded, if received.

16 _____ Original exhibits included in ongoing notebook
17 and will be filed with counsel at conclusion of
discovery.

18 _____ Via Email.

19 Enclosures: (As above noted)

20 cc: John B. Draper, Esq.; Autumn L. Bernhardt, Esq.

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